

KENWOOD

FM/AM CD RECEIVER

KDC-78R

KDC-68R

## INSTRUCTION MANUAL

KENWOOD CORPORATION



**Take the time to read through this instruction manual. Familiarity with installation and operation procedures will help you obtain the best performance from your new FM/AM CD receiver.**

### **For your records**

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your KENWOOD dealer for information or service on the product.

Model KDC-78R/68R Serial number \_\_\_\_\_

# WARNING

## CAUTION

The use of optical instruments with this product will increase eye hazard.

## INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna

Relocate this equipment with respect to the receiver

Move this equipment away from the receiver

Plug this equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

- As the laser beam used in this compact disc player is harmful to the eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.

## FCC WARNING:

This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

## NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment may cause harmful interference to radio communications, if it is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

# SAFETY PRECAUTIONS

## **⚠ WARNING**

**Observe the following instructions to prevent fires and personal injury.**

- Press in the unit until it is locked in position in the detachable case. This prevents it from being dislodged in the event of an accident, which can lead to further personal injury.
- When the Power supply lead, Memory backup lead or Ground lead are extended, use a 0.75 mm<sup>2</sup> (AWG 18) or larger automotive grade cable which will withstand friction and heat to safe guard against fires occurring as a result of short-circuiting.
- Make sure that metal objects, particularly needles or coins do not get into the unit to prevent short-circuiting and fires.
- If smoke comes out of the unit or a strange smell is present, disconnect the unit immediately and consult your KENWOOD dealer. Continued use under these circumstances could cause a fire, as well as damage the unit permanently.

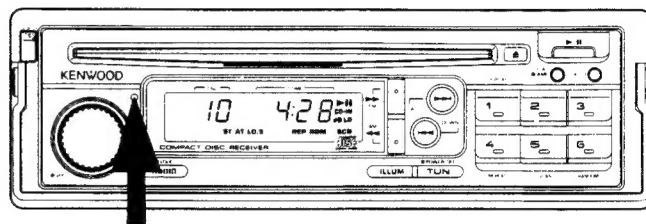
## **⚠ CAUTION**

**Heed the following instructions to keep the unit in proper working order.**

- The unit should be connected to a 12 V DC power supply with a minus ground connection.
- Do not open enclosures, such as the front panel, top or bottom covers.
- Do not place the unit, where it will be exposed to direct sunlight or near heating devices.
- Do not expose the unit to water.
- Do not place the unit in areas of excessive dust, high humidity or on unstable surfaces.

## **NOTE**

- If you have difficulty in installing the set in your car, please contact your KENWOOD dealer.
- If your set malfunctions or operates abnormally, first press the Reset button. If the malfunction persists, leave the set as it is and please call your KENWOOD dealer.



Reset button

# CARE AND MAINTENANCE

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## Cleaning

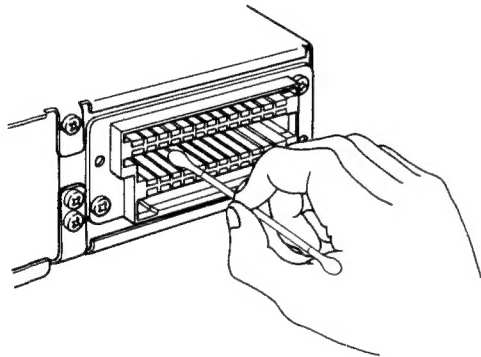
1. Turn the power off, before cleaning the unit.
2. Wipe the front panel and other exterior surfaces of the unit with a soft dry cloth or a soft cloth lightly moistened with a neutral detergent.

### **▲ CAUTION**

- Do not use abrasive pads, thinner or benzene (or other volatile solvents) to clean the unit as this may remove indicator characters.

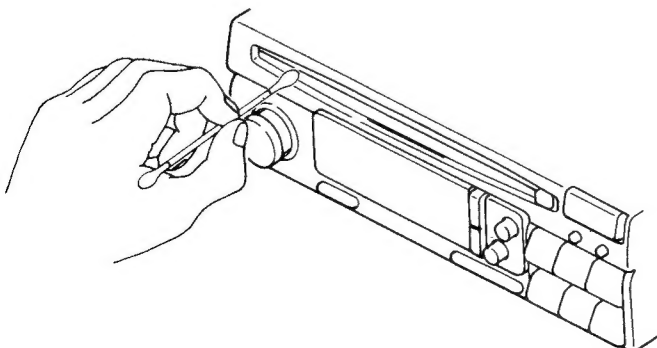
## Rear connector cleaning

The connection at the rear sometimes will require cleaning. Periodically wipe the connector with a cloth moistened with alcohol as shown below.



## CD slot cleaning

The CD slot sometimes requires cleaning because dust is liable to accumulate. If a disc is loaded in the dusty CD slot, the disc may be damaged.



## Note on Operation

- When you use the CD Player for the first time, or if you have replaced the battery, push the RESET button with the tip of a pencil or similar pointed object.
- If a disc is inserted violently, sometimes a protection circuit will function and stop the operation. Should the protection circuit function, turn the power switch OFF once and then turn it ON again.

## About Condensation

- When a disc or disc magazine is brought from a low-humidity place to a car where there is high humidity due to rain, etc., water vapor may condense on the disc. Or, when the main unit of the changer is installed under the dashboard, condensation may occur on the surface of the optical lens immediately after turning on the heater. If the CD player is operated in this condition, the laser pickup may not correctly read out the signal, or dropouts may occur occasionally. Thus, correct operation may not be obtained. In such cases, dehumidify the disc, or remove the disc magazine from the changer and leave it for about one hour, at which time correct operation will resume.

If the CD player does not operate correctly after a long time interval, consult your dealer or nearest KENWOOD Service Station.

## About temperature

- When a car is exposed to sunlight with all the windows closed, the temperature inside will rise considerably. When it rises above 60 degrees C, a circuit that protects the interior will function, displaying "HOLD" and the compact disc may sometimes cease to operate. In such a case, the compact disc cannot be played back. At that time, operate the air-conditioner or open the window and drive for a while to decrease the room temperature. When the room temperature is lowered, the "HOLD" indicator automatically goes off and play starts automatically. If the compact disc cannot still be played back correctly, press the reset button.

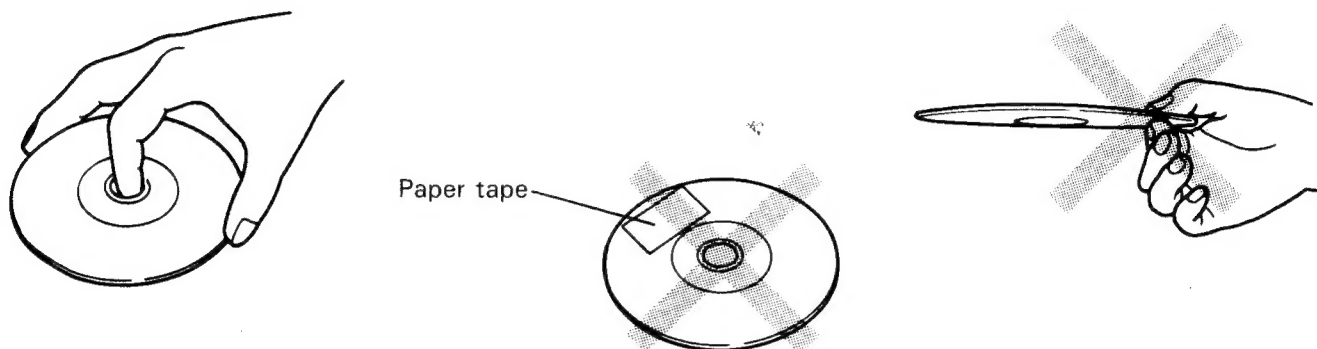
# BEFORE USE

## Handling of compact disc

- Stains, dust or scratches on the disc or warping of the disc will cause malfunction such as skipping. Handle the disc in the following manner so that you may enjoy the beautiful sound of the CD Player for a long time.

### < Handling the disc >

Hold the disc without touching the music storage area (glistening rainbow colors). Do not apply a paper tape to the label on the disc nor to the music storing area.

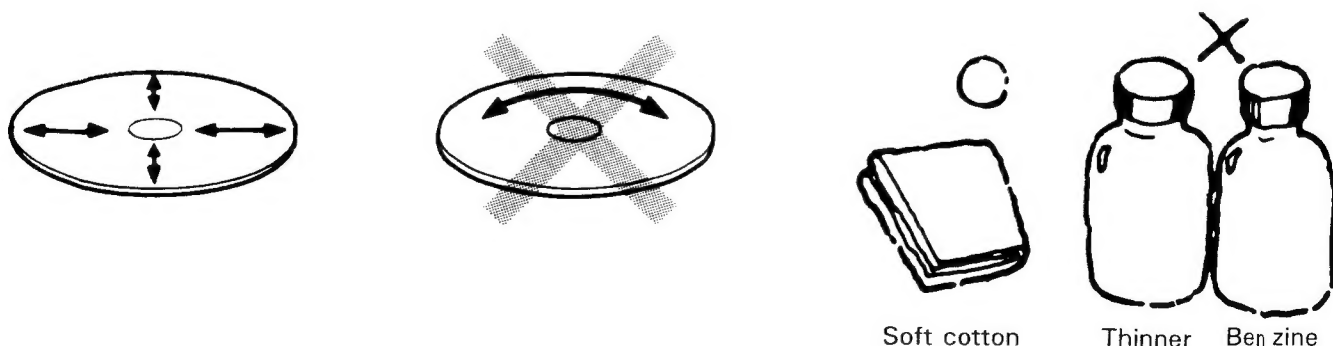


### < Storage of compact disc >

- Do not put the disc where it is exposed to direct sunlight, heat or humidity.
- Especially in summer, never leave the disc exposed to direct sunlight or placed on the seat or dashboard with the windows closed because the temperature will rise considerably and the disc will warp.
- When the player is not in use for an extended period of time, remove the disc magazine from the changer, and store it in a place which is not subject to high temperature or high humidity.  
Be sure to store the discs in their cases or in the magazine. Do not leave them outside of the case or magazine, or piled up, or leaning on a slant. This may cause scratches, dirt or warping.

### < Cleaning of compact disc >

If there are fingerprints or stains on the disc, remove them by lightly wiping it with soft cotton cloth from the center toward the outside edge. Never use thinner or benzine. Also, avoid using conventional record cleaner.



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# SPECIAL FEATURES

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## ■ Tuner section

- **Seek tuning (P. 10)**  
Automatically locates and receives stations.
- **Preset station tuning (P. 17)**  
Registers the frequency of your favorite stations in memory to allow one-touch tuning.
- **Auto memory (P. 18)**  
Automatically stores the frequency of a station that provides the best reception quality in memory. Once a station is stored, it can be accessed through preset station tuning.

## ■ CD player section

- **Track scan play (P. 19)**  
Plays back short snatches of each track on a CD starting from the beginning. This is a convenient feature when searching for a track you would like to listen to.
- **Track repeat play (P. 20)**  
Repeats playback of a CD track.
- **Random play (P. 21)**  
Allows you to listen to the tracks of a compact disc in random order.

## ■ Useful features

- **Theft prevention chassis (P. 22/KDC-78R only)**  
When you leave the car, you can easily take the unit with you. This helps you to prevent theft.
- **Selectable illumination (P. 23/KDC-78R only)**  
The color of the illumination can be switched between green and orange.
- **Clock indication (P. 24/KDC-68R only)**  
The time can be displayed on the display window.
- **Channel space selection (P. 25)**  
Allows you to switch the channel space between FM: 200 kHz/  
AM: 10 kHz and FM: 50 kHz/  
AM: 9 kHz.



# POWER AND VOLUME

## POWER ON/OFF

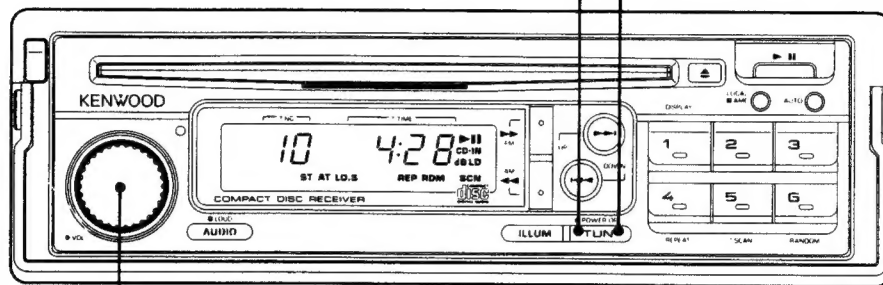
Press the Power switch.  
(The power goes ON.)

Press the Power switch for more  
than 1 second.  
(The power goes OFF.)

## ALL MODE STAND BY

Tap the Power switch during tuner  
mode.

(The power remains in the ON  
condition and wait for operation of  
each mode state.)



## VOLUME

Turning this knob clockwise,  
increases the volume, and turning  
counterclockwise, decreases.

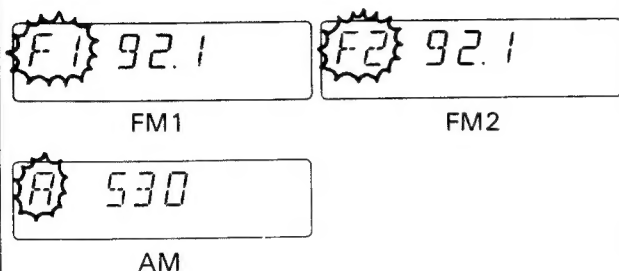
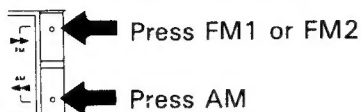
## NOTE

- When turning the Power switch ON, operation begins from the Tuner mode.
- Perform the following operations with the power on.

# SEEK TUNING

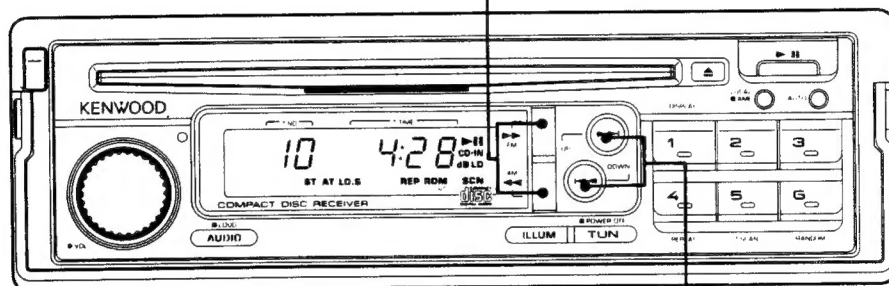
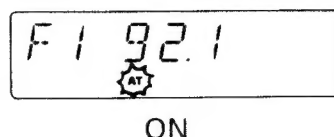
1

Select the desired Band.



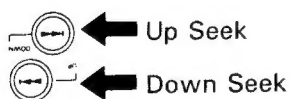
2

Turn the Auto switch ON.

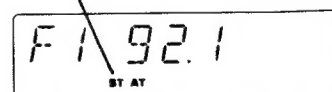


3

Press the Seek switch.  
(Seek starts and receives  
a broadcast station.)

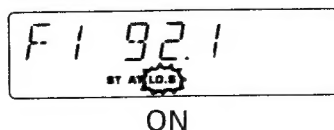
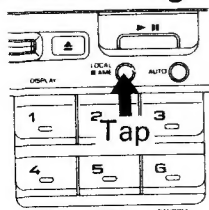


Lit when FM stereo  
broadcast is received.



Indicates reception frequency.

## < Local tuning >

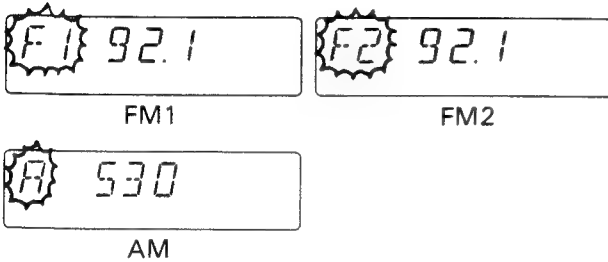


- If the Local switch is turned ON during SEEK TUNING and AUTO MEMORY, it will stop at stations only with satisfactory reception conditions.

# MANUAL TUNING

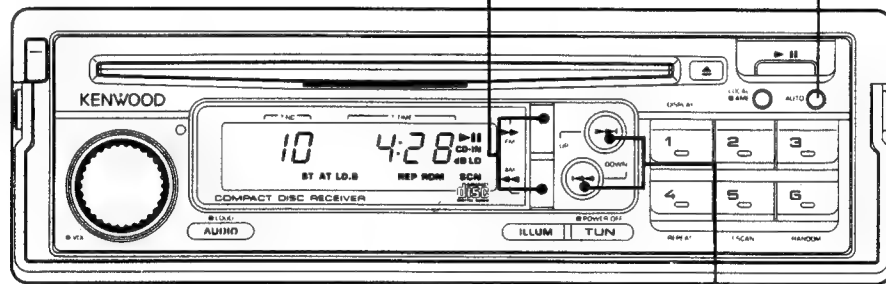
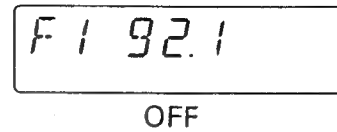
**1**

Select the desired Band.



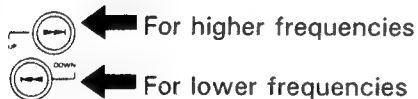
**2**

Turn the Auto switch OFF.



**3**

Press to select the desired frequency.

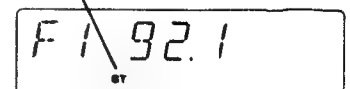


(Continued pressing will change it continuously.)

**4**

Indicates the frequency being received.

Lit when FM stereo broadcast is received.

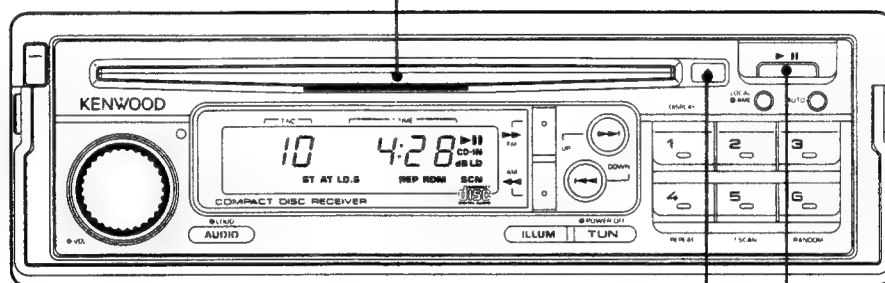
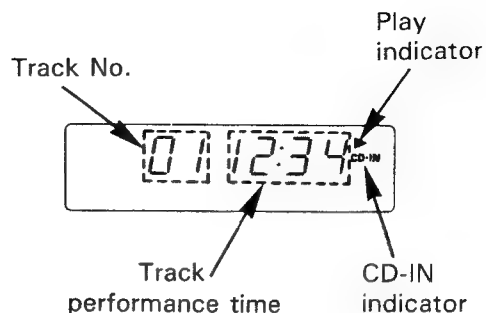
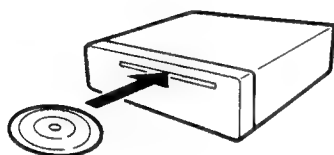


Indicates reception frequency

# COMPACT DISC PLAY

## COMPACT DISC PLAY

Insert a 12 cm CD or an 8 cm CD with the label sides up.  
(The disc will be drawn in, starting the CD, CD-IN and Play indicator to light ON.)



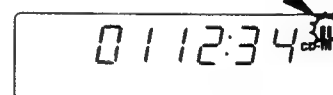
### EJECT

Press the Eject switch.  
(The disc will come out.)

### PAUSE

Press the Play/Pause switch.  
(Disc play is temporarily paused and Pause indicator lights up.)  
If you press the switch once more, the disc is replayed from the paused part.

Pause indicator



### NOTE

- Automatic loading and play can be made if the Play/Pause switch is pressed in the eject condition. Furthermore, if more than 15 seconds elapse in the ejection condition, it will automatically load and stop.
- When a disc is already inserted, do not insert another disc into the inserting slot.

## AHEAD/BACKWARD (at high speed)

Operation	Press
Ahead	▶▶
Backward	◀◀

The Ahead/Backward play is released as soon as the finger is removed from the switch.

## TIME DISPLAY

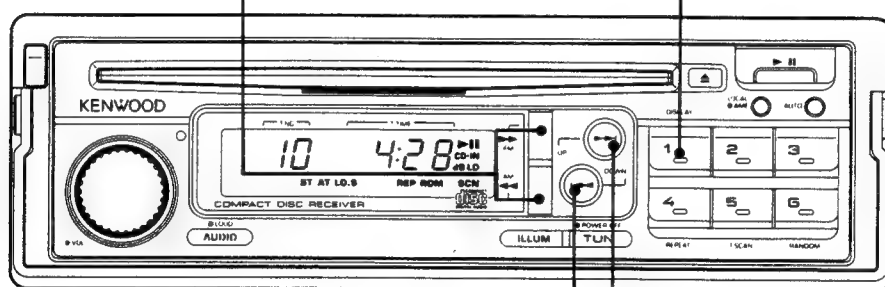
Press the Display switch.  
(Every time you press it, it switches over between the track performance time and the absolute time. When the absolute time is displayed, " + " will appear.)

020 1:23 CD-IN

Track performance time display

02+ 12:34 CD-IN

Absolute time display



## BACKWARD TRACK SEARCH

Press the ◀◀ switch successively until the Track No. display shows the desired track No.

02 -00:00 CD-IN

Track No. display

## FORWARD TRACK SEARCH

Press the ▶▶ switch successively until the Track No. display shows the desired track No.

05 -00:00 CD-IN

Track No. display

## < How to change the modes >

Present Mode	Destination Mode	Operation
CD	Tuner	Tap the Power (Tuner) switch. (Compact disc play stops)
Tuner	CD	A CD should be inserted or press Play/Pause switch.

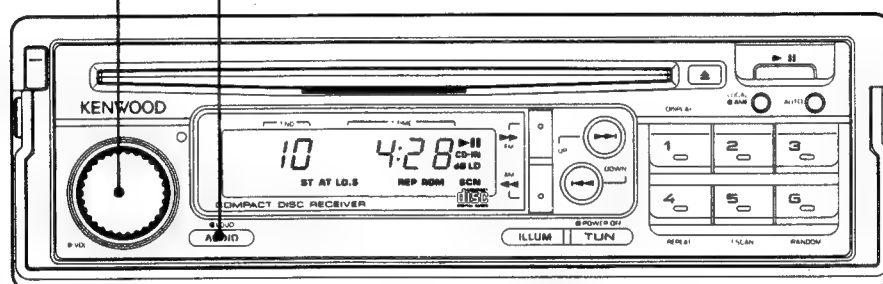
# AUDIO CONTROL

**1**

Tapping the Audio switch will enable the audio control. Unless it is pressed, Volume and it becomes possible to adjust in the order of Bass, Treble, Balance and Fader and back to Volume if tapped every time.

**2**

Adjustment will be made by the Audio controller respectively. For operations and display, refer to the following table.



## TO RELEASE

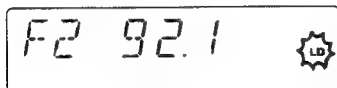
If operation is not made for about 5 seconds, volume adjustment will be ready to be set.

Display	Operation of volume controller	
	Turn counterclockwise	Turn clockwise
Adjust the Volume 	Volume decreases.	Volume increases.
Adjust the Bass response 	Bass decreases.	Bass increases.
Adjust the Treble response 	Treble decreases.	Treble increases.
Adjust the Balance of the right and left channels 	The left sound will be emphasized.	The right sound will be emphasized.
Adjust the Balance of the front and rear channels 	The front sound will be emphasized.	The rear sound will be emphasized.

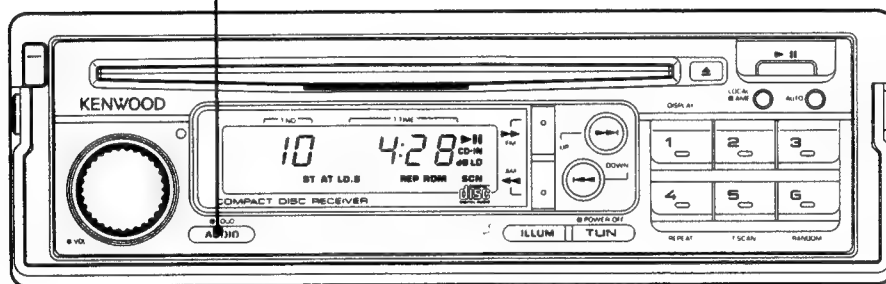
# LOUDNESS

## LOUDNESS SWITCH

When listening at low volume levels, press this switch for more than 1 second will activate the loudness circuit which will compensate for the human ear's decreased response.



ON





# PRESET STATION TUNING

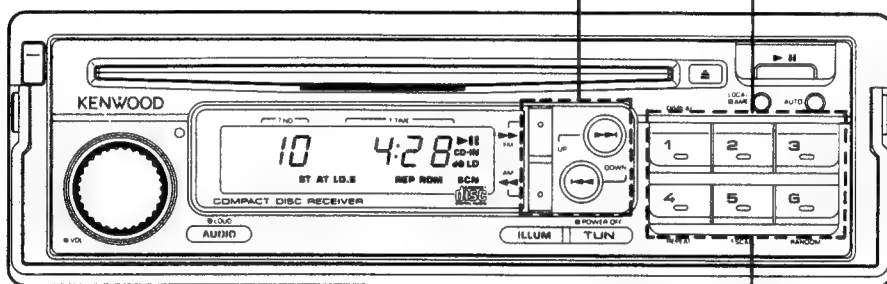
1

Selects the band and station you wish to preset.

2

Press the Preset station switch you wish to be kept preset for more than 2 seconds.  
(When it is pressed, the number of switch pressed will be indicated.)

F 1 92.106



3

By repeating operation of 1 - 2 above, one station can be memorized in one switch each at FM1, FM2 and AM.

4

If tapped, the preset station can be called out.  
(The number of switch pressed will be indicated.)

F 1 92.106

## NOTE

- If preset is to be made anew on the switch already preset, what was preset before will be replaced with what is to be preset.

# AUTO MEMORY

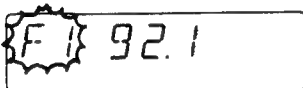
1

Select the desired Band.

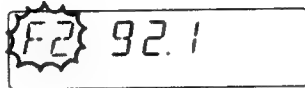


Press FM1 or FM2

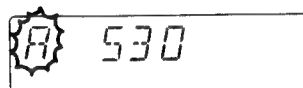
Press AM



FM1



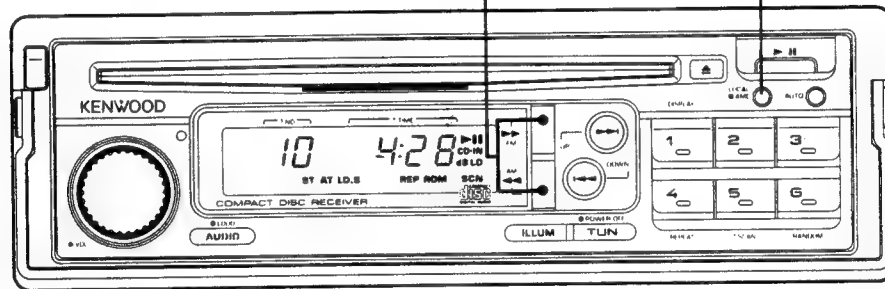
FM2



AM

2

Press the Auto memory switch for more than 2 seconds.



3

The selected band is automatically scanned and 6 stations are memorized. When 6 stations are memorized, the AUTO MEMORY function is automatically released.

4

The station last stored in memory is received.

# TRACK SCAN PLAY

1

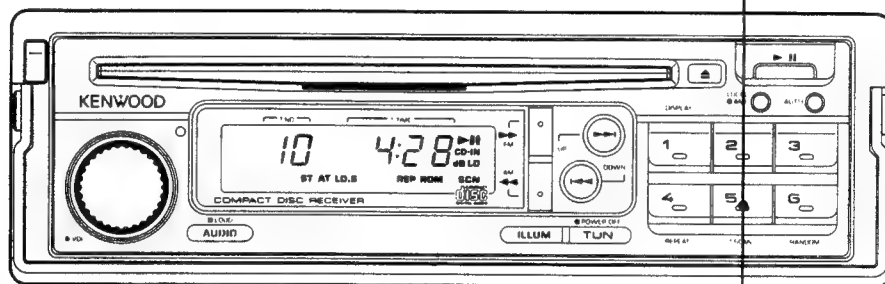
Press the Track scan switch.  
(Scan indicator lights up.)



ON

2

The first 10 seconds of all tracks in  
the CDs are played in sequence.  
(The Track No. display blinks.)



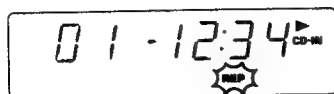
3

When the beginning of a desired  
track starts to be played, press the  
Track scan switch.  
(TRACK SCAN is released and  
normal CD play starts.)

# TRACK REPEAT PLAY

**1**

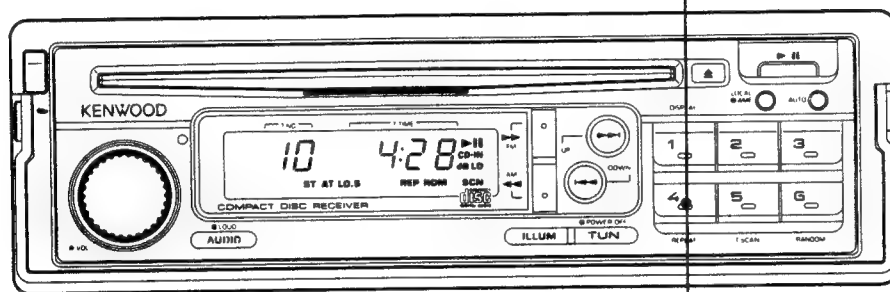
Press the Track repeat switch.  
(Repeat indicator lights up.)



ON

**2**

The track being played is played repeatedly.



## TO RELEASE

Press the Track Repeat switch again.

# RANDOM PLAY

**1**

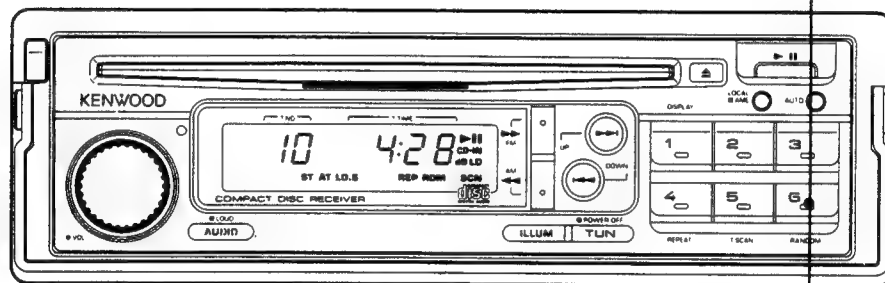
Press the Random switch.  
(Random indicator light up,  
changes the track number display  
one after another and selects the  
track.)



During Random Search

**2**

The tracks in the CD is played in a  
random order.



**3 To select another track**

Press the ►► switch.  
(The next selection is played back.)

**TO RELEASE**

Press the Random switch again.

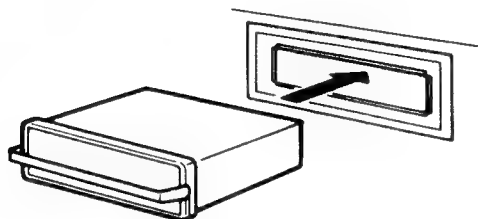
# INSERTION/REMOVAL OF UNIT

## < Functions of the KDC-78R >

### ■ Insert the unit

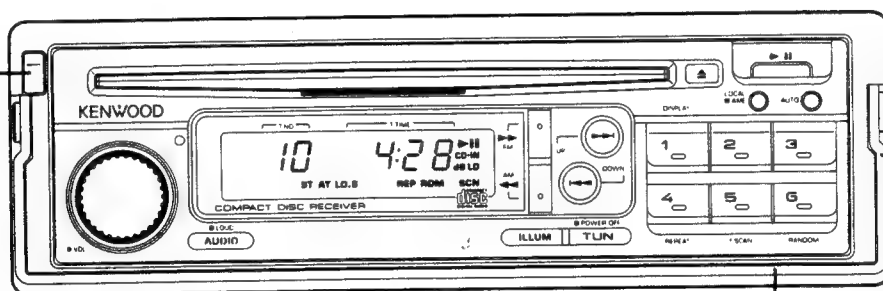
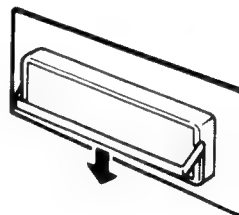
1

Insert the unit into the detachable case.



2

Lower the handle down to the bottom.



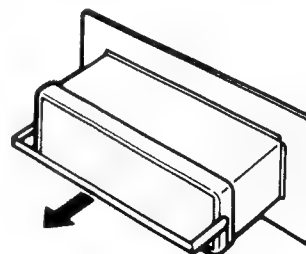
### ■ Remove the unit

1

Press the T.P.C. button.  
Lift the handle.  
(The handle lock is released.)

2

Hold the handle and pull it out.



## ⚠ CAUTION

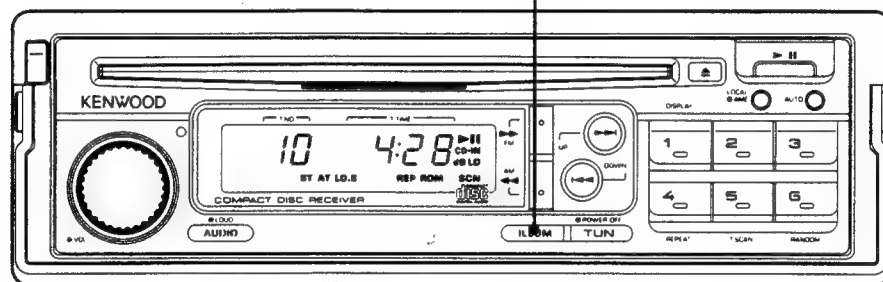
- This unit is precisely designed. While transporting the unit, do not apply shock. Doing so may damage the unit.

# SELECTABLE ILLUMINATION

## <Functions of the KDC-78R>

- Illuminations can be changed to fit the type of car or to suit your own taste.

Every time the Illumination switch is pressed, it will switch over between the colors of green and orange.



# CLOCK INDICATION AND ADJUSTMENT

## < Functions of the KDC-68R >

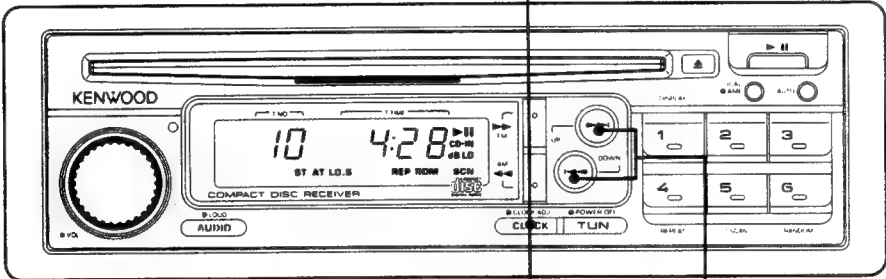
### ■ Display clock

Every time Clock switch is tapped, the indications change as follows:

10:30

Clock indication

Mode	Indications
Tuner	Received frequency ⇔ Time
CD	Track number/Play time ⇔ Time



### ■ Clock Adjustment

1

Keep on pressing Clock adjustment switch.  
(Then, make sure that clock indication is present.)

2

Adjust "Hour" with ◀◀ switch and "Minute" with ▶▶ switch while continuing the operation in 1.



# CHANNEL SPACE SELECTION

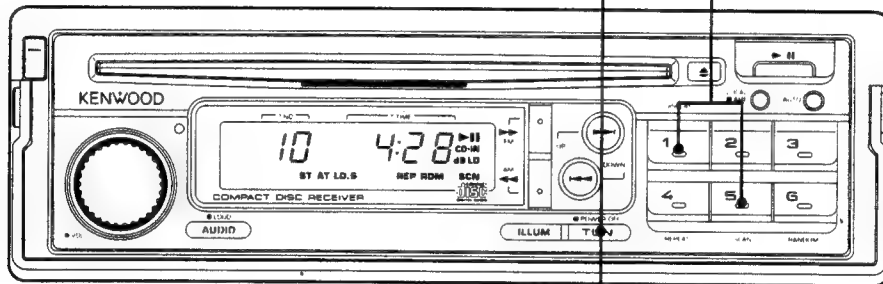
- The KDC-78R/68R has a channel space select function.  
Two spacing frequencies are available for both FM and AM,  
200 kHz or 50 kHz for FM, and 10 kHz or 9 kHz for AM.

**1**

Turn the power OFF.

**2**

Keep on pressing the Preset station switch of "1" and "5"



**3**

Turn ON the power while engaged in the operation of 2.  
(Channel space will turn to 50 kHz for FM and 9 kHz for AM.)

**4**

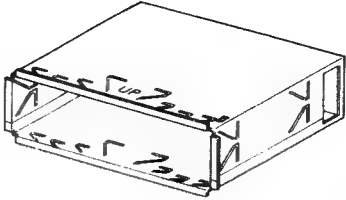
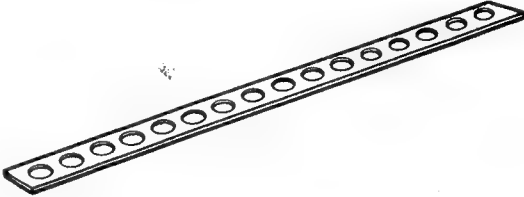

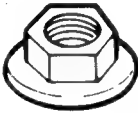


To bring it back the home position, carry out operations of 1-3 again.  
(Channel space returns to 200 kHz for FM and 10 kHz for AM.)

## NOTE

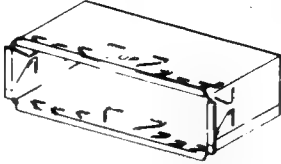
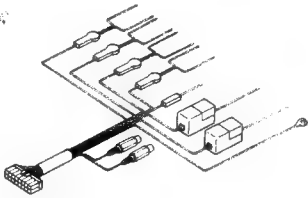

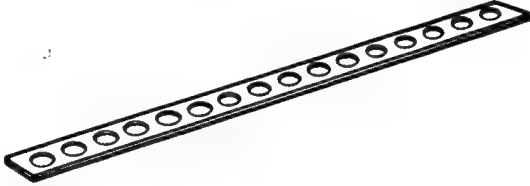

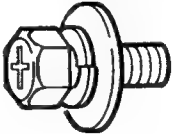
- When the channel space is changed, the memorized contents are erased.

# ACCESSORIES

## ■ KDC-78R

Part name	External View	Number of units
Detachable case		1
Metal mounting strap		1
Hex. Bolt (M5×20)		1
Hex. nut (M5)		2
Stepped screw (M3×15.8–8.8)		2
Stepped screw (M3×10.7–5.8)		2

## ■ KDC-68R

Part name	External View	Number of units
Mounting sleeve		1
Power connection cord		1
Removal bracket		1
Metal mounting strap		1
Machine screw (M5×6)		4
Washer assembly screw (M4×8)		1

# PROCEDURE

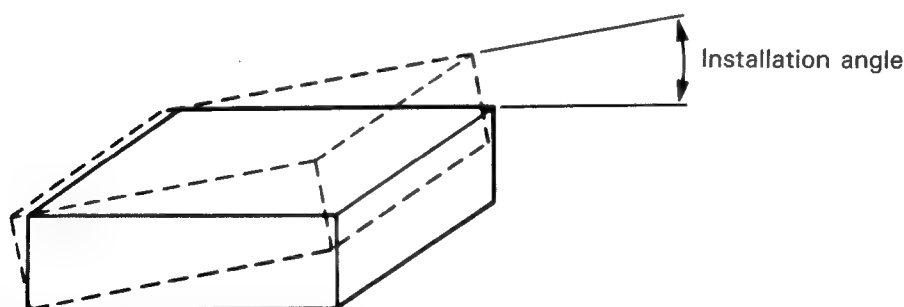
- ① Before installation and wiring, remove the  $\ominus$  terminal of the battery to prevent short-circuiting.
- ② Connect the input and output cords of the system. (☞ P. 29)
- ③ Connect the Ground lead (Black) to the metal chassis of the car. (☞ P. 29)
- ④ Connect the Memory backup lead (Yellow). (☞ P. 29)
- ⑤ Connect the Power supply lead (Red). (☞ P. 29)
- ⑥ KDC-78R: Install the Detachable case. (☞ P. 30)  
KDC-68R: Install the unit in the car. (☞ P. 31)
- ⑦ Connect the negative  $\ominus$  terminal of the disconnected battery.
- ⑧ Place the unit in the Detachable case. (☞ P. 22/KDC-78R only)
- ⑨ After installation, surely press the Reset button.

## ⚠ CAUTION

- A short-circuit may be the cause of blown fuse. A short-circuit is a serious problem that can lead to a fire. Check the wiring and rewire if any wires are short-circuited. After this (or if no short-circuits are found), replace the fuse with one having the same capacity (see indication on fuse box).
- Make sure that unconnected wires and connectors are not in contact with the live chassis (ground) of the car to prevent noise and current from entering the system which can cause it to malfunction or damage the unit. For the same reason, caps on connectors that are not used should not be removed.
- This product is equipped with a BTL (Balanced Transformer Less) system to provide more power. In a BTL system, different speaker terminals must not be connected or shared as this will cause distortion or damage to the speakers. The output terminals of two or more speakers must under no circumstances be joined or connected to the chassis (ground) of the car.

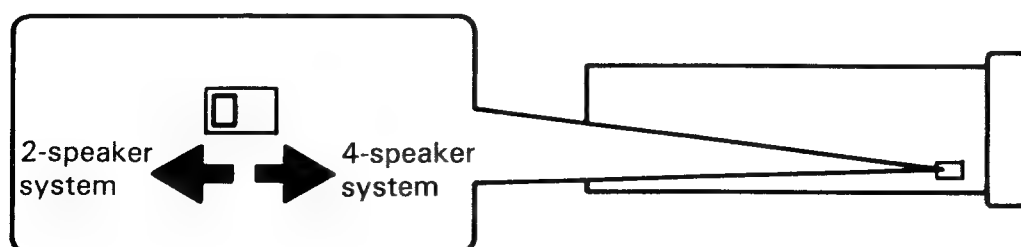
## ■ Installation angle

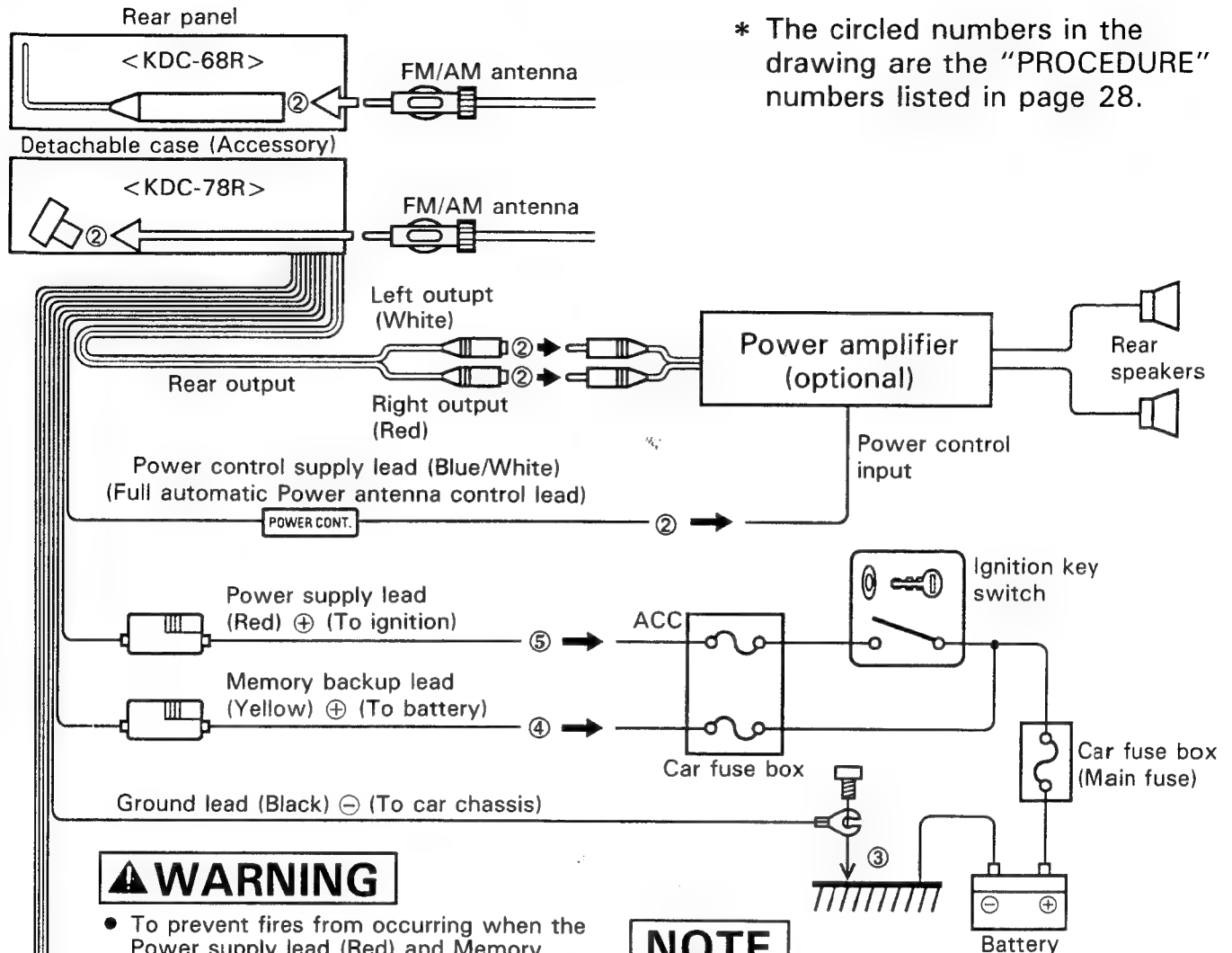
This unit should be installed with an angle of less than  $30^\circ$  from the horizontal surface.



## ■ Speaker output selector switch

Set the selector switch on the bottom plate according the speaker system used.





\* The circled numbers in the drawing are the "PROCEDURE" numbers listed in page 28.

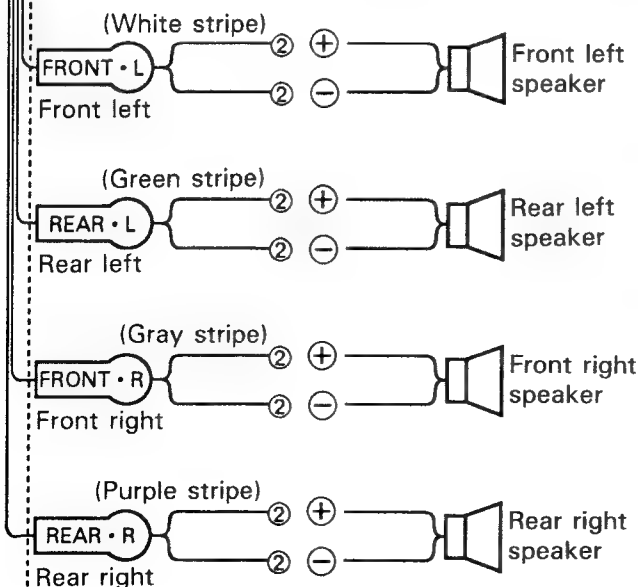
## ⚠ WARNING

- To prevent fires from occurring when the Power supply lead (Red) and Memory Backup lead (Yellow) are short-circuited by accidentally coming into contact with the chassis (ground), connect the power supply after fuse box connections have been made.

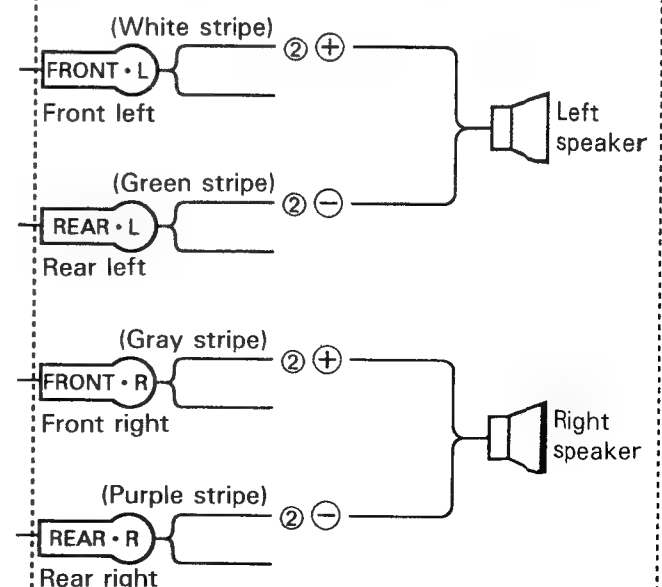
## NOTE

- When 4-speaker system or 2-speaker system is selected, be sure to check the switch setting. (Refer to page 28.)

### When connecting to 4 speakers

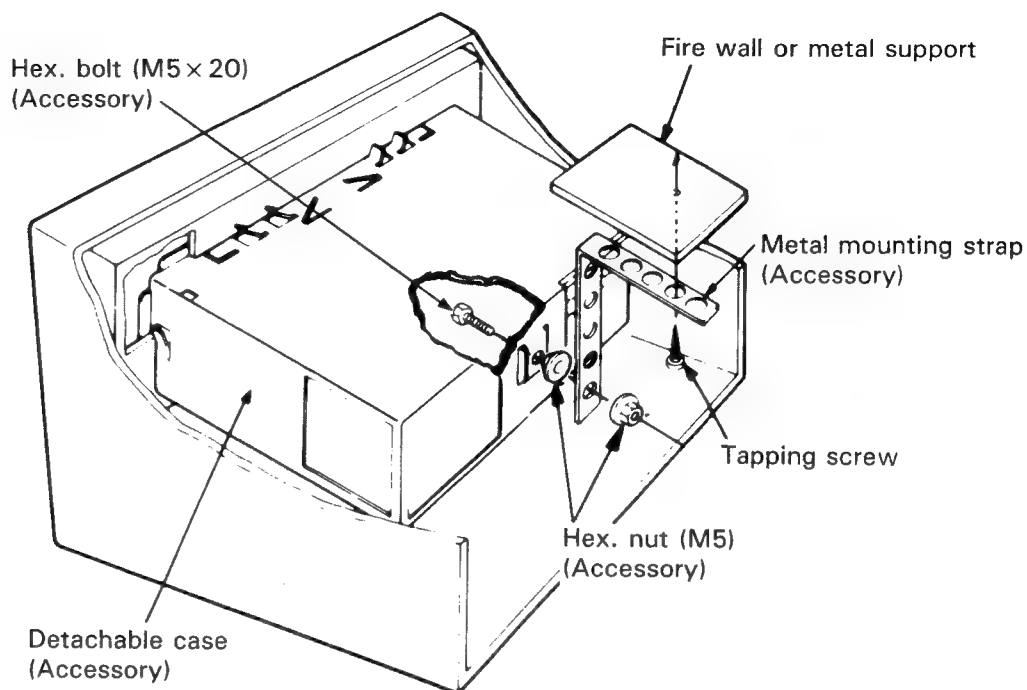


### When connecting to 2 speakers



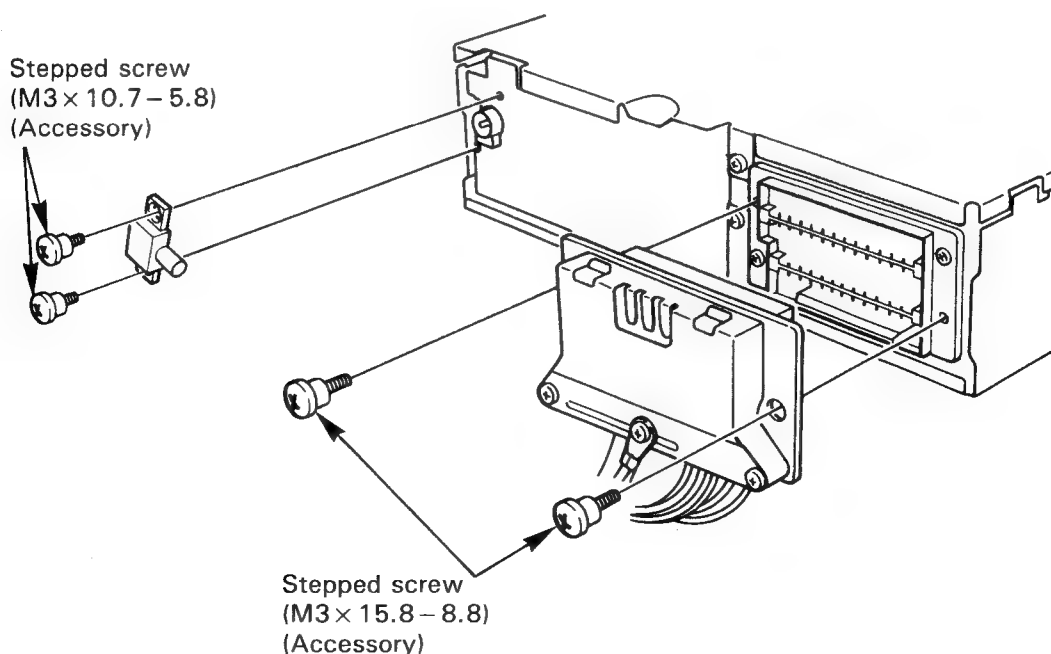
# INSTALLATION (KDC-78R)

- ⑥ Insert the Detachable case into the console and clamp with the claws.  
If the detachable case cannot be inserted, cut off the console with a file.

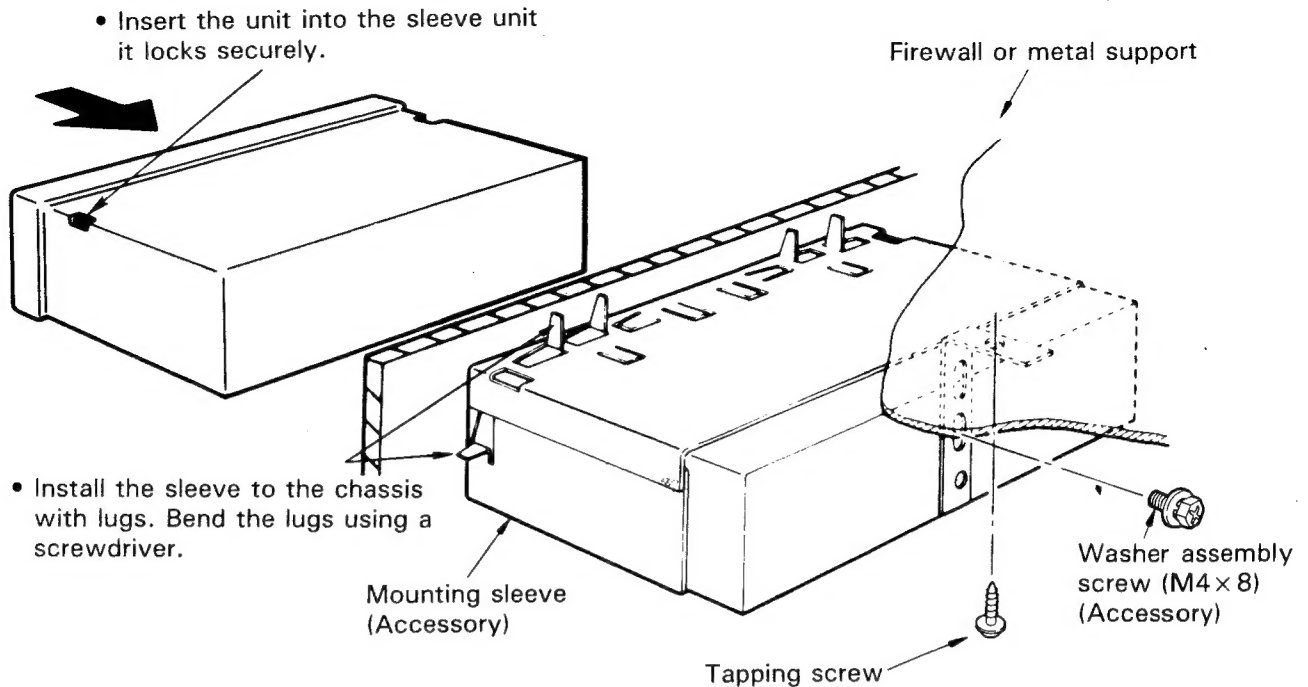


## NOTE

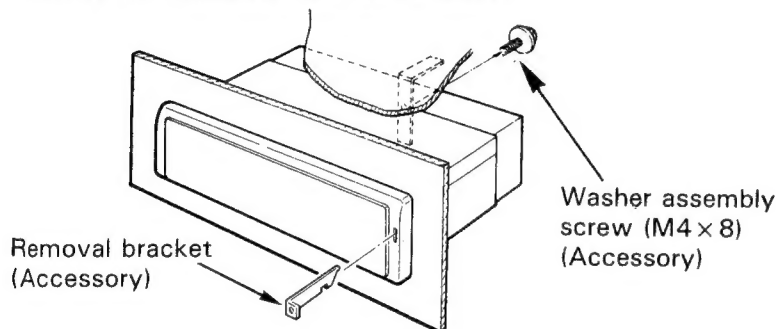
- Securely install the Detachable case. If the case is not installed correctly, the sound may be skipped.
- To install the unit without Detachable case, disconnect the wireharness from the detachable case and connect the wireharness to the unit directly.



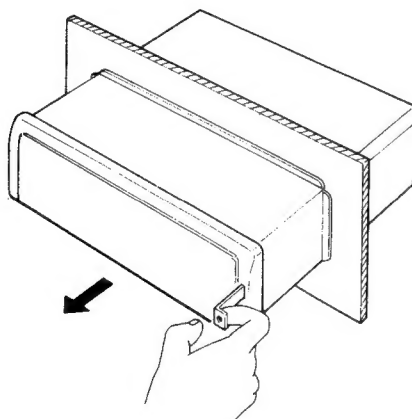
# INSTALLATION (KDC-68R)



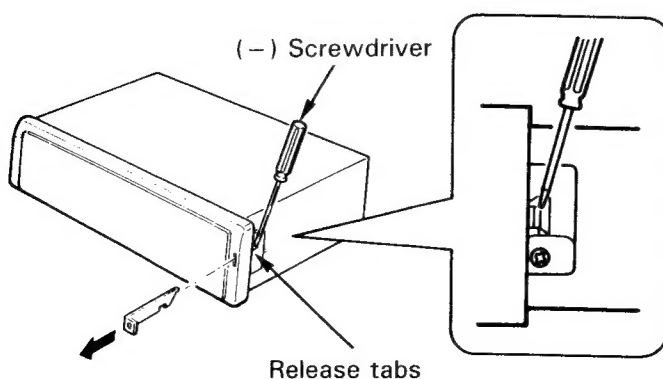
## [How to remove the KDC-68R]



1. Remove the TP screw (M4 × 6) retaining the back panel of the KDC-68R. Then, insert removal bracket into the hole.



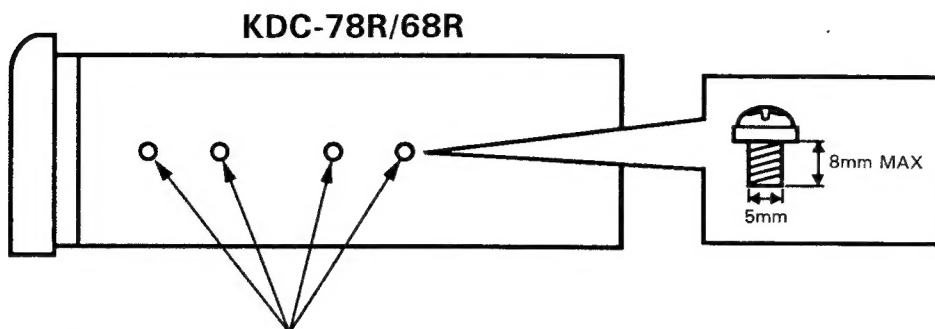
2. Pull out the removal bracket by hooking the fingers simultaneously.



3. To release the removal bracket, use a screwdriver to press down the release tabs on the side of the chassis and pull the removal brackets.

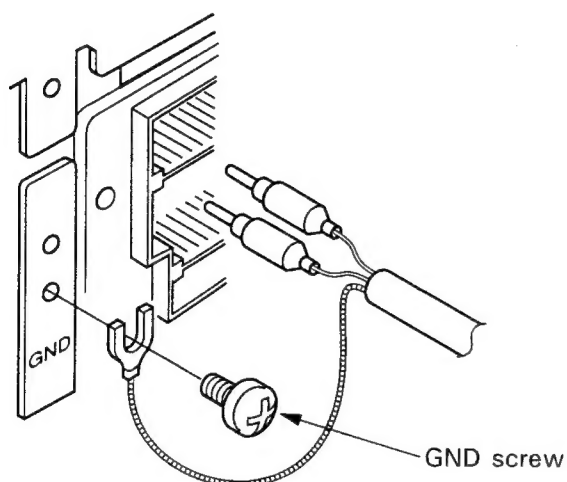
# INSTALLATION

- Tighten up the TP screw (M5) into the following four holes when installation is made for Japanese-made cars.



Installation holes for Japanese-made cars.

- When the detachable case is not used and the RCA cord with a GND wire is used, connect the GND wire to the GND screw at the rear of the unit.





# TROUBLESHOOTING GUIDE

What often appears to be a malfunction is often due to user error in operation or connection. When trouble occurs with your unit, please check the following before calling for service.

Symptom	Cause	Remedy
<b>Compact disc cannot be inserted.</b>	A compact disc has already been inserted and you are trying to insert another disc.	Eject the previously inserted disc and insert another one.
<b>A disc is ejected immediately after being inserted.</b>	<ol style="list-style-type: none"> <li>1. The compact disc is inserted upside down.</li> <li>2. The compact disc is very dirty.</li> </ol>	<ol style="list-style-type: none"> <li>1. Insert the disc with the labeled side facing up.</li> <li>2. Clean the disc (refer to "Cleaning of compact disc").</li> </ol>
<b>Even when the required track is specified, the specified track is not played or the player does not function.</b>	The player is set to RANDOM PLAY.	Release RANDOM PLAY.
<b>Sound is skipped by vibrations.</b>	The compact disc is dirty or damaged.	If the sound skips even while the car is stationary, clean the compact disc (refer to "Cleaning of compact disc").
<b>The sound quality is poor due to noise during playback.</b>	<ol style="list-style-type: none"> <li>1. The compact disc is damaged or dirty.</li> <li>2. The sound recorded in the compact disc itself is poor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the compact disc (refer to "Cleaning of compact disc").</li> <li>2. Try playing another compact disc. If its sound quality is good, the poor sound was due to the disc itself.</li> </ol>
<b>No sound one channel</b>	The balance/fader control is extremely rotated to one side.	Adjust the balance/fader control.
<b>Poor reception</b>	The antenna is not extended.	Extend the antenna.
<b>Operation switches do not function.</b>	Correct operation is not obtained due to a sudden change in the power voltage, etc.	Press the Reset button of the front panel.

# SPECIFICATIONS

Specification subject to change without notice.

## Disc Section

Laser Diode.....	GaAlAs ( $\lambda = 780 \text{ nm}$ )
Digital Filter (D/A).....	4 Times Over Sampling
D/A Converter.....	1 bit (with D.P.A.C)
Spindle Speed.....	500 ~ 200 rpm (CLV)
Wow & Flutter.....	Below Measurable Limit
Frequency Response ( $\pm 1 \text{ dB}$ ).....	10 Hz ~ 20 kHz
Total Harmonic Distortion (1 kHz).....	0.01%
Signal to Noise Ratio.....	93 dB
Dynamic Range.....	96 dB
Channel Separation.....	85 dB
Laser Diode Properties	
Material.....	GaAlAs
Wavelength.....	780 nm
Emission Duration.....	Continuous
Laser Output Power.....	Less than 44.6 $\mu\text{W}$

\* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block.

## FM Tuner Section

Frequency Range.....	87.9 MHz ~ 107.9 MHz
Channel Space.....	200 kHz
Usable Sensitivity.....	12.0 dBf (1.1 $\mu\text{V}/75 \Omega$ )
50 dB Quieting Sensitivity.....	15.2 dBf (1.6 $\mu\text{V}/75 \Omega$ )
Frequency Response ( $\pm 1 \text{ dB}$ ).....	30 Hz ~ 15 kHz
Signal to Noise Ratio (IEC-A).....	73 dB
Selectivity (DIN).....	70 dB
Capture Ratio.....	1.5 dB
Stereo Separation (1 kHz).....	40 dB

## AM Tuner Section

Frequency Range.....	531 kHz ~ 1700 kHz
Channel Space.....	10 kHz
Usable Sensitivity.....	27 dB $\mu$

## Audio Section

Max. Power Output.....	25 W $\times$ 2 or 8 W $\times$ 4
Power Output (4 $\Omega$ , 30 Hz ~ 20 kHz, 1% THD).....	15 W $\times$ 2 or 5 W $\times$ 4
Tone Action.....	Bass: 100 Hz $\pm$ 8 dB Treble: 10 kHz $\pm$ 8 dB
Preout Level (10 k $\Omega$ ).....	1.0 V

## General

Operating Voltage.....	14.4 V (11 ~ 16 V)
Current Consumption.....	5.0 A
Operating Temperature.....	-10 ~ 50 $^{\circ}\text{C}$
Installation Size (W $\times$ H $\times$ D).....	180 $\times$ 50 $\times$ 170 mm (7-1/16 $\times$ 1-15/16 $\times$ 6-11/16 in.)
Weight.....	KDC-78R: 2.0 kg (4.4 lb) KDC-68R: 1.2 kg (2.6 lb)